

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

DAWN R. GALL

COMMISSIONER



ELIAS BALDACCI

GOVERNOR

March 21, 2005

Mr. Orlando Monaco
Department of Navy
Engineering Field Activity-Northeast
Code 1823/OM
10 Industrial Highway, Mailstop 82
Lester, PA 19113-2090

Re: Sites 1, 3 and Eastern Plume-Monitoring Event 24
Naval Air Station, Brunswick, Maine

Dear Mr. Monaco:

The Maine Department of Environmental Protection (MEDEP) has reviewed the draft final "Monitoring Event 24, April 2004 Report for Sites 1 and 3 and Eastern Plume", dated December 2004, prepared by Environmental Chemical Corporation. Based on that review MEDEP has the following comments and issues.

General Comments

1. As MEDEP has previously expressed, MW-1104 is a poor choice as a background monitoring well for biodegradation evidence at the Eastern Plume. It is within the former plume pathway, and is very close to the former Fire Training Pit, where a large leach field was constructed several years ago for disposing of the Eastern Plume effluent discharge. The Brunswick NAS regulators and the Navy have discussed whether a more suitable background well exists, but no consensus has been reached. This issue must be resolved rather than to continue to collect questionable data. (MTG)
2. An unexplained change in the boundary configuration of the Eastern Plume occurred when concentrations of COCs at both MW-207AR and MW-319 dropped below the MEGs/MCLs. One explanation might be that clean groundwater is being drawn into this area by artesian flow or by increased flow of the springs at SEEP-11. Another explanation is that groundwater with little dissolved contamination is arriving from the clean water discharge from the infiltration gallery at Site 11, which began in early 2002. Whatever is occurring may have considerable bearing on future remediation progress. (Also see comment 12 below.) (RR/MTG)

Specific Comments:

3. Section 1.4, Measurement of Water Level Elevations, p. 1-5, 2nd paragraph:

"However, MW-309B, a shallow bedrock well, is currently considered to be representative of the deep flow system, and is included on deep potentiometric surface maps (Figure 7)."

AUGUSTA
17 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0017
(207) 287-7688
RAY BLDG., HOSPITAL ST.

BANGOR
106 HOGAN ROAD
BANGOR, MAINE 04401
(207) 941-4570 FAX: (207) 941-4584

PORTLAND
312 CANCO ROAD
PORTLAND, MAINE 04103
(207) 822-6300 FAX: (207) 822-6303

PRESQUE ISLE
1235 CENTRAL DRIVE, SKYWAY PARK
PRESQUE ISLE, MAINE 04769-2094
(207) 764-0477 FAX: 764-1507

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Figure 7 shows the accompanying monitoring well (MW-309A) instead. The map elevation is "artesian" which pertains to MW-309A. Please correct the well label and provide the measured elevation as 21.82, given in Table 4. (ED)

4. Section 1.5, Groundwater Monitoring, Sampling, and Analysis, p. 1-5/1-6 bottom paragraph:

Only one monitoring well (MW-217B) at Sites 1 and 3 is sampled within the slurry walls. The text says that the well was pumped dry and was slow to recharge. Samples were collected; however, the chemical representativeness of the groundwater sample can be jeopardized when a well is pumped dry. It is time to revisit the LTMP selection of the shallower well (MW-217B), rather the adjacent deeper well (MW-217A). Alternatively, a replacement well for MW-217B might be screened 5 to 10 feet deeper. (RR)

5. Section 1.7, Water Quality Indicator Parameter Measurements, p. 1-8, 2nd and 3rd paragraphs:

"After the water quality indicator parameters stabilized, one set of readings was recorded on the field forms."

"At monitoring wells where diffusion samples were collected, water quality indicator parameters were recorded immediately following removal of the diffusion samplers."

- a) The field forms for diffusion sample bag retrievals shows only one set of instrument readings, as the above statements would indicate. As MEDEP previously commented, one set of recorded data provides no evidence that parameters did indeed stabilize. Our recommendation to the stakeholders is that three sets of readings be made and recorded at every well, seep, and surface water station, spaced several minutes apart. This should be resolved prior to the next monitoring event. (MTG)
- b) The second statement further elaborates that parameter readings are taken "immediately" following removal of the diffusion samplers". Some forms in Appendix E show the difference between sample collection and parameter measurement readings is 10 minutes. Please state what length of time the Navy has for a target between activities, and why this interval is considered optimal. (RR)

6. Section 1.8.1, Groundwater Samples at Sites 1 and 3 and Eastern Plume, p. 1-9, para 2 & 3:

The terms "shallow interval" and "deep interval" are used to separate monitoring well sampling results into two map groups (Figure 9 and Figure 10). Please provide a statement in this section that relates this separation to the groupings used to generate shallow and deep potentiometric contour maps presented in Figures 6 and 7. (ED)

7. Section 1.8.1, Sediment Samples at Sites 1 and 3 and Eastern Plume, p. 1-10:

The section heading includes Sites 1 and 3, whereas the two sentences in this section only mention the Eastern Plume. Please correct. (ED)

8. Section 2.1, Groundwater Extraction and Treatment System Performance Summary, p. 2-1, 2nd paragraph:

"Extraction wells EW-01, EW-02A, EW-04, and EW-05A were operational during the majority of time since the last monitoring event (October 2003) with minor exceptions related to routine maintenance or power interruptions."

Table 5 of this monitoring event report documents that EW-04 was not operational during the entire month of April 2004. In fact, EW-04 was down for several months due to pump problems. This lost in extraction capacity was quite significant in accounting for the relatively large drop in monthly VOC removal rates (bottom graph on page 2-2). This apparent cause and effect must be addressed in this section. (ED)

9. VOC Removal Graphs on page 2-2 and Section 2.1 text on p. 2-3:

The multi-month decline in VOC removed (from approximately 1.8 kg/month to 0.4 kg/month in the bottom graph) must be specifically explained, in the manner that the decline to zero in the fall of 2001 is explained. Due to EW-04 being non-operable for several months, MEDEP cannot agree that this significant decline between Monitoring Events 23 and 24 resulted from the elimination of plume hot-spots. This section needs to be revised, and more discussion/qualifiers added. (RR & ED)

10. Section 2.2, Water level Gauging Program, p. 2-3, last paragraph:

"During the period 1 November 2003 through 30 April 2004, trigger elevation in MW-201R was reached (46.78 ft MSL) but not in the other selected gauging wells."

The trigger elevation for MW-201R, given in the table on page 2-3, is 35 ft MSL. This well is located on the upgradient side of the slurry wall and is not inside the waste disposal area. The water level in this well has very little bearing on the performance of the Site 1 & 3 ROD objective of keeping the landfills dewatered below the bottom of the buried wastes. Please explain the purpose of including this well in the early warning network for rising groundwater levels for the landfills. (ED)

11. Section 2.3.1, Sites 1 and 3 – Volatile Organic Compounds, p. 2-4, Monitoring Well MW-217B:

a.) "The concentration of 1,4-dichlorobenzene has increased from not detected to 17.3 µg/L."

Table B-1 shows the concentration is 21.6 µg/L. The concentration of 1,2-dichlorobenzene is 17.3 µg/L. Please correct the above sentence. (ED)

b.) MEDEP notes that since diffusion samples began in 2001 at this well, the spring sample concentrations consistently have been roughly a half an order of magnitude greater than the fall concentrations, but only the spring of 2004 did not exceed the MEG of 27 µg/L. (NR)

12. Section 2.3.3, Eastern Plume – Volatile Organic Compounds, p. 2-7, Monitoring Well MW-207AR:

"VOC concentrations for both mid- and deep interval aqueous diffusion samples are higher than the sample results from Monitoring Event 23 and return to historical trend levels."

The trend graph in Appendix C for MW-207AR indicates that the historical low concentrations of ME-23 may be viewed as anomalous. This well has been reported as "artesian" during recent monitoring events. However, the amount of flow over the top of the riser, if any, is not reported. Variations in discharge of groundwater from this well could cause significant variations in VOC concentrations in diffusion samples. These monitoring event reports also show that the concentrations in samples from MW-319 have followed the same recent trends of MW-207AR. MW-319 is approximately 250 feet upgradient of MW-207AR, indicating that the cause of the strong dip in concentrations of ME-23 impacted more

than one location. The Navy should recognize this event and relate it to field conditions (pumping changes, flowing wells, etc.). (RR)

13. Section 2.3.3, Eastern Plume – Volatile Organic Compounds, p. 2-7, Monitoring Well MW-224:

"An aqueous diffusion sample was collected from low- and mid-interval for this sampling interval."

A deep diffusion sample was not collected at MW-224, therefore, "low-" is likely referring to a low-flow sample. Please review this and the next sentence and correct appropriately. (ED)

14. Section 2.3.3, Eastern Plume – Volatile Organic Compounds, p. 2-7, Monitoring Well MW-225A:

"Concentrations of total VOCs (disregarding acetone) are the highest measured since 1997."

This is true for Monitoring Event 23, but it is not true for this monitoring event (24), according to the graphed data in Appendix C. Please revise. (ED)

15. Section 2.3.3 Eastern Plume – Volatile Organic Compounds, p. 2-8, Monitoring Well MW-230A:

"The concentration of TCE exceeded the State MEG and Federal MCL and has increased since Monitoring Event 23."

If the trend of the last two monitoring events continues, it could mean that the plume is migrating southward again, and may represent a significant development in view of the recent eastward movement of plume contaminants to MW-313. The stakeholders should continue to monitor this trend. (MTG)

16. Section 2.3.3 Eastern Plume – Volatile Organic Compounds, p. 2-8, Monitoring Well MW-311:

"Since the *[sic]* May 2003, total VOC concentrations have gradually increased to 119 ug/L in the deep diffusion samples."

The mid-depth and deep diffusion samples showed the same concentration in April 2004. This occurrence and nearby EW-02A pumping at a relatively very low rate of 4 gallons per minute for many months suggests that shallow water is being induced into the EW-02A drawdown cone at a much lower rate than before. It appears that local dilution of the plume may have slowed or stopped, and plume concentrations have responded by increasing. (NR)

17. Section 2.3.3 Eastern Plume – Volatile Organic Compounds, p. 2-8, Monitoring Well MW-313:

"The total VOC concentrations have decreased during the last monitoring events."

The April 2004 data are not shown on the graph of Appendix C, so this trend is not visible. Please update the graph. Also, the total VOC concentration in Table B-3 is 88.1 ug/L not 84 µg/L as stated in the following sentence in the report. (ED)

18. Section 2.3.3 Eastern Plume – Volatile Organic Compounds, p. 2-8, Monitoring Well MW-319:

PCE increased from non-detect to close to 30 µg/L, although the total VOC concentration decreased. Please include the actual PCE concentration for Monitoring Event 24. (ED)

19. Section 2.3.3 Eastern Plume – Volatile Organic Compounds, p. 2-8, Monitoring Well MW-331:

"Total VOC concentrations have increased from approximately 400ug/L to 1,024 µg/L in April 2004."

The low-flow graph in Appendix C (Figure 116) gives a very low concentration of 9.5 µg/L, without providing a breakdown of individual contaminants. Please explain/justify the huge difference between the diffusion sample and the low-flow sample results. If the Navy cannot provide an adequate explanation for the difference then duplicates must be run on both the diffusion samples and the low flow samples. (MTG/RR)

20. Section 2.3.3 Eastern Plume – Volatile Organic Compounds, p. 2-10, Extraction Well EW-04:

This well needs to be included in this section even though it was not operating in April 2004. The months that EW-04 has been down should be given. Its rate of extraction is approximately 25 to 35 gpm, which is half of what the total system pumps when EW-04 is running. Therefore, this well is very important to total VOC mass removed. (ED)

21. Section 2.4.4.1, Sites 1 and 3 – Volatiles, p. 2-15, LT-04 and LT-05:

Both of these sediment stations experienced large increases in total VOCs, after two successive monitoring events at non-detect, in particular LT-05. Both April 2004 samples have 1-4 dichlorobenzene in common. During the web conferences in February and March the Navy countered MEDEP's concern for very slow remediation of inorganics at Sites 1 and 3 by pointing out the near disappearance of VOCs in media downgradient of the site. The sediment sampling results for April 2004 do not support the Navy's premise that VOCs have been practically eliminated in downgradient groundwater. Also please change the spelling of dichlorobenze to dichlorobenzene. (RR/ED)

22. Section 2.4.4.2, Sites 1 & 3 – Inorganics, p. 2-16, LT-04:

"Arsenic and lead concentrations reached a new high of 101J and 82.2J µg/kg, respectively during April 2004 sampling event."

Nickel, not arsenic, was one of two inorganics that reached new high concentrations. The April concentration for nickel was 76.1Jµg/L. Please correct this sentence. (ED)

23. Section 2.4.4.2, Sites 1 & 3 – Inorganics, p. 2-16, LT-05:

"Arsenic reached concentrations of 970 J mg/kg during April 2004 sampling event."

This statement implies either that more than one sample was taken in the April 2004 concentration, or that 970 J is the highest on record for LT-05. As neither is true, please rewrite as follows: *"A high arsenic concentration of 970J mg/kg was measured in April 2004, but that is well below the record high of approximately 5000 mg/kg in the spring of 2003."* (ED)

24. Section 2.5, Monitored Natural Attenuation Sampling Program, p. 2-17, 1st paragraph:

"Because DCE and vinyl chloride are readily metabolized by direct oxidation, these contaminants are typically degraded at downgradient plume locations, where the concentrations of dissolved oxygen is elevated relative to proximal plume locations. At the Eastern Plume, DCE has been detected although vinyl chloride has not been detected."

The distribution of dissolved oxygen in groundwater at the Eastern Plume indicates to MEDEP that very low concentrations occur at most downgradient sentinel wells. At most locations where DCE is found, oxygen is not elevated. Therefore, direct evidence is not available to indicate that metabolism is occurring by direct oxidation. It is possible that oxidation may be occurring in the wetland areas where monitoring wells do not exist. The first sentence needs to be reformulated. MEDEP suggests changing the second sentence as follows: *"At many locations in the Eastern Plume, DCE is routinely detected at a number of monitoring wells, but vinyl chloride has not been detected at any monitoring well."* (ED)

25. Section 2.5.1, Eastern Plume, p. 2-18, 2nd to last paragraph:

"To determine the efficacy of natural attenuation, a groundwater sample from a currently unimpacted well (MW-1104) within the saturated zone of the former western portion of the Eastern Plume was selected as a background comparison to those locations within the Eastern Plume. Background levels of dissolved oxygen at location MW-1104 were 3.49 mg/L, while Eh was 82 mV."

MEDEP has several concerns with the above statements. The specific assessment that this section addresses is in situ biodegradation. This term should be used in place of the all-encompassing term "natural attenuation", as natural attenuation occurs everywhere regardless of parameter values (dispersion, dilution from recharge, etc.). As discussed at the December 2004 Technical Meeting, MEDEP does not feel comfortable with using monitoring well MW-1104 as a background well. MW-1104 is close to and downgradient of the major remediated source area for the Eastern Plume (Site 11 fire training pit). Even though VOCs have not been detected at this well in recent years, fine-grained soil lenses (which do not supply water during sampling) might yet be impacted and influence the subsurface environment. Therefore, the sampled groundwater may not be impacted in 2004 but measurements to discern a reducing environment may be impacted by the historic contamination at this location. Both measured dissolved oxygen and Eh values in April 2004 are abnormally lower than expected for a background well, particularly considering that a number of wells with the current contaminated area of the Eastern Plume have substantially higher values. A more appropriate background well has not yet been recommended by the regulatory agencies. See General Comment 1. (RR)

26. Section 2.5.1, Eastern Plume, p. 2-19, Chloride, last sentence:

"The eight locations are predominately found in the Eastern Plume."

The purpose of this statement is unclear regarding the use of "predominately". All the named wells are associated with the Eastern Plume, however, half of the wells (MW-224, MW-319, MW-335, and MW-338A) are outside the mapped boundary of the plume because VOCs do not exceed MCLs/MEGs. Therefore, only half of the eight wells are within the mapped Eastern Plume boundary. Please rephrase this statement, or delete it. (ED)

27. Section 2.5.1, Eastern Plume, p. 2-20, Nitrate, 1st and 2nd sentences:

a.) "Nitrate was reported at concentrations below the method detection limit (<110 mg/L) at 21 of 34 monitoring wells sampled, which is also reduced in comparison to the nitrate levels reported in MW-1104 (320 µg/L), the representative background location."

Units of concentration are not compatible between Table B-5 and this sentence. In the table, the concentration for nitrate for MW-1104 is 0.32 µg/L, whereas the text reports 320 µg/L. MEDEP recommends that the inorganic concentrations all be reported as mg/L. Thus, for MW-1104 the correct concentration would be 0.32 mg/L. (ED)

b.) "The lack of nitrate in groundwater at the site is an indication of the potential for chlorinated VOC biodegradation, because when present at higher concentrations, nitrate may compete as an electron acceptor during reductive dechlorination."

The Navy's premise is not clear as to whether the lack of nitrate is evidence that reductive dechlorination is actually occurring. If this is the intent, explain why nitrate is not just naturally very low in groundwater across the Eastern Plume, or alternatively, that the treatment plant waste water discharge from the gallery just upgradient of MW-1104 is adding nitrate or causing an in situ release of nitrate from the shallow soil. Nonetheless, the difference between 0.32 mg/L and non-detect value (< 0.11 mg/L) seems insignificant in terms of electron acceptor potential. (RR & ED)

28. Section 2.5.1, Eastern Plume, p. 2-20, Arsenic and Manganese:

"The greatest arsenic levels were detected in samples collected from MW-338A, MW-303, and MW-NASB-212, which are associated with regions of elevated methane."

These wells are located just downgradient of the leading edge of the Eastern Plume of the south and north lobes. At these locations, dissolved oxygen in groundwater is near zero or low. This inverse relationship between methane and dissolved oxygen concentrations is expected. It is well known that arsenic can become liberated to the soluble and mobile As (III) by contact with groundwater nearly depleted of oxygen. The presence of methane may not signify that it is the catalyst for leveled arsenic in well samples. Also, not all the elevated methane concentrations shown in Figure 13C have been included in the isocontouring. Most notable are three wells (MW-303, MW-335, and MW-338A) located hundreds of feet beyond the leading edge of the mapped plume. The above text statement must be revised to include recognition of very low dissolved oxygen that is associated with high methane concentrations. (RR/ED)

29. Section 2.5.1, Eastern Plume, p. 2-21, Methane:

a.) "Methane was detected above the method detection limit at 7 of the wells (...) indicating that methanogenesis conditions are[sic] have been achieved in selected regions. ... Most likely the methane is from methanogenesis of natural organic carbon associated with Mere Brook and Merriconeag Stream."

This assessment seems logical considering where the seven wells are located. Consequently, the methane occurrence map presented in Figure 13C should be replaced with an isocontour map of dissolved oxygen which would be more appropriate in recognizing natural attenuation. (Also see comment 28.) (ED)

b.) The last sentence in this paragraph should be strengthened as follows: "*The nutritional value and/or distribution of natural organic carbon, and the microbial community may not be adequate for complete reductive dechlorination prior to discharge of contaminated groundwater to the surface, as evidenced by the continued discharge of low levels of VOCs at SEEP 11.*"

30. Section 2.5.2, Natural Attenuation Screening Process, p. 2-22, 1st & 2nd paragraphs:

"A weighted score was established for individual groundwater sampling locations for the April 2004 sampling data at the Eastern Plume. The results of the screening evaluation are listed in Table 17."

"Weighted scores for groundwater locations assessed were isocontoured to evaluate spatial trends and possible correlations with other findings that favorably indicated the potential for chlorinated VOC reductive dechlorination. Isocontoured natural attenuation scores, reflecting the adequacy of evidence for chlorinated VOC degradation, are illustrated on Figure 14."

Comparison of the weighted scores per well presented in Table 17 with weighted scores displayed and contoured in Figure 14 are contradictory with differences ranging between -2 and +3. (Seven wells show no differences.) The reason for these differences is not explained in the text. Please justify the adjustment process that was applied to the Table 17 data to generate the Figure 14 weighted scores. Until this information is obtained, MEDEP cannot accept the potential biodegradation partitioning displayed in Figure 14. (RR)

31. Section 2.5.2, Natural Attenuation Screening Process, p. 2-22, 2nd paragraph, last sentence:

"The areas of higher concentrations of TCE, 1,1,1-TCA, and 1,1-DCA in the northern and southern regions of the Eastern Plume may be connected, although no groundwater data confirm a connection."

The current conceptual model implies that groundwater moves from the northern region to the southern region of the plume, but may not state this premise outright. Without this data this sentence must be deleted or rewritten as follows: "The areas of higher concentrations of TCE, 1,1,1-TCA, and 1,1-DCA in the northern and southern regions of the Eastern Plume *have been assumed to be connected*. ~~to may be connected, although no groundwater data confirm a connection.~~"

If the Navy has any doubt that a connection does not exist, this issue needs to be addressed as a data gap. It is very late in the conceptualization of the Eastern Plume to question whether thru-flow of the plume occurs from north to south. (ED/RR)

32. Section 2.5.3, Natural Attenuation Summary and Conclusions, p. 2-23, 2nd paragraph:

After the first sentence, the following statement needs to be inserted to distinguish two different areas of the plume: "*Only primary stage daughter products consisting of 1,1-DCA and 1,1-DCE were detected along the southern leading edge of the plume, while cis-1,2-DCE was also present at MW-207AR, located 800 feet north and across Mere Brook.*"

33. Section 2.5.3, Natural Attenuation Summary and Conclusions, p. 2-23, 3rd paragraph:

"Vinyl chloride and 1,2-DCE oxidation is possible under aerobic or Fe (III) reducing conditions."

Please add to the report the locations within or bordering the Eastern Plume where true aerobic or Fe reducing conditions exist, according to the Monitoring Event 24 data. (ED)

34. Section 2.5.3, Natural Attenuation Summary and Conclusions, p. 2-23, last paragraph:

At the end of the first sentence please substitute "... *in three relatively small areas of the Eastern Plume, shown in the red dot pattern in Figure 14*" in place of "... in certain areas of the Eastern Plume". (ED)

35. Section 3.1, Conclusions and Recommendations, p. 3-1, Conclusion, 1st bullet:

a.) "Concentration trends from monitoring wells located within the body of the Eastern Plume appear to be relatively stable, suggesting limited migration of the VOC plume during the period in which log-term monitoring has been conducted"

The long-term concentrations trends show many exceptions to trend stability over the entire period of long-term monitoring. The above statement needs to be reassessed by the Navy since it is contrary to their data base for the last 10 years of monitoring. MEDEP likes ECC's approach of comparing individual wells with their recent trends and long term trends and would like to see this carried through in the conclusions. (ED)

b.) "These increases suggest an area of increased VOC contamination is moving south."

MEDEP continues to believe that the increasing concentrations at MW-331 do not necessarily mean that a body of VOC contaminated groundwater is moving south. Other likely explanations have been provided to the Navy during the past year. (NR)

36. Section 3.1, Conclusions and Recommendations, p. 3-1, Conclusion, 2nd bullet:

"While this data is not definitive, they indicate that the portions of the deep zone of the Eastern Plume associated with natural organic carbon has conditions which are favorable for complete reductive dechlorination and other regions may be favorable for anoxic oxidation of partially reduced chlorinated VOCs."

MEDEP's assessment of the capacity for reductive dechlorination does not support the optimism implied in the above statement. Figure 14 shows that "adequate evidence of biodegradation" occurs at only three monitoring wells, and that three wells are separated by hundreds of feet of "limited evidence of biodegradation" or "inadequate evidence of biodegradation". Much more data and expansion of the study is needed before MEDEP can make a determination of whether MNA is a viable option. To date, the data does not support that natural attenuation is occurring throughout or in critical areas of the plume. (RR)

37. Section 3.1, Conclusions and Recommendations, p. 3-1, 2nd bullet, Recommendation:

"Additionally analyze samples from MW-331, P-106, and M-225A,[sic] as these correspond to regions of high VOCs."

MW-225A concentration is over an order of magnitude lower than the other two named wells, and its total VOC is not as high as at a number of other wells. Perhaps the Navy meant MW-311. Also, please replace the "regions" with "*localities*". (RR/ED)

38. Section 3.1, Conclusions and Recommendations, p. 3-2, Recommendation, 2nd paragraph:

"This second round of data suggests that monitored natural attenuation may be a viable remedial option for the Eastern Plume, and this process may be partly responsible for the relative slow movement of the Eastern Plume toward the south."

The assessment presented in Section 2.5.3 appears to be a more realistic summary of viability than the above sentence. The tone of the natural attenuation assessment should be consistent throughout this report. Please reconcile these differences, particularly with respect to the natural attenuation scoring isocontours presented in Figure 14. (Also see comment 36 above.)

In addition, while dilution and dispersion would be at work within the plume it is highly unlikely that biodegradation is significantly retarding the movement of the plume. This statement also disregards the limited containment and removal of contaminants by the extraction system. (ED)

39. Section 3.1, Conclusions and Recommendations, p. 3-2, Conclusion for 2nd bullet, last sentence:

"...although the data from Monitoring Event 23 did not show continued surface water impacts."

Please add "*and Monitoring Event 24*" after "Monitoring Event 23".

40. Section 3.1, Conclusions and Recommendations, p. 3-2, Recommendation for 3rd bullet:

"Based on observations noted above, ECC recommends the one-time collection of three additional surface water samples downstream of SW-12 to assess surface water quality at increasing distances from the potential exit point of the Eastern Plume."

As discussed as part of the Second Five Year Review, pore water sampling should be performed along the eastern edge of the Eastern Plume within Mere Brook prior to sediment sampling as well as surface water sampling. Also, the phrase "from the potential exit point" must be identified. One way to do this is to substitute the following phrase: "*upstream and downstream of MW-313/SW-12 along Mere Brook*". While the Navy would like to conduct this important sampling along Mere Brook only one time, MEDEP likely will require multiple rounds. (RR/ED)

41. Section 3.1, Conclusions and Recommendations, p. 3-3, Recommendation for 4th bullet:

"Consider discussing possible reduction of sampling frequency or sample points for surface water and leachate stations during future long-term monitoring optimization."

a.) MEDEP is willing to discuss this recommendation at any time with the Navy. However the Navy must prove that the reduction in sampling frequency or sampling points will not negatively affect the long term monitoring program's objectives. To date MEDEP does not feel that a reduction in sampling frequency or sampling points is warranted and in some locations additional monitoring should be undertaken.

b.) The Navy's should add the following recommendation per our many discussions of mini wells : "*Very shallow water collectors (mini-wells) will be constructed at Sites 1 and 3 downgradient leachate seeps in the spring of 2005.*" (ED)

42. 3.1, Conclusions and Recommendations, p. 3-3, Recommendation for 5th bullet:

Consideration should be given to changing the remedial approach for the Eastern Plume from pump-and-treat ..."

The remedial approach for the Eastern Plume also includes containment and a change to hot spot removal would necessitate a change in the Record of Decision. (MTG)

43. Section 3.1, Conclusions and Recommendations, p. 3-3, Recommendation for 6th bullet:

"Abandon extraction well EW-01 as soon as possible to eliminate the potential for cross-aquifer contamination if pumping during groundwater extraction is interrupted."

Support for replacing EW-01 has been given for the past several years. No plan has been received from the Navy to date to accomplish this goal. The issue of possible cross-contamination is secondary to improving capture of the plume near the southern boundary. This is because cross-contamination has likely already occurred to the extent that it can occur, given that EW-01 was constructed with a very long screen that could allow flow between deep and shallow groundwater zones under certain hydraulic conditions. At any time, pumping can be shut down at only EW-01, and the well casing immediately grouted and properly abandoned. However, a replacement well already planned and funded so that it can be brought on-line soon thereafter.
(RR)

Thank you for the opportunity to review this report. If you have any questions or comments please call me at (207) 287-7713 or email me at claudia.b.sait@maine.gov.

Respectfully,

A handwritten signature in cursive script, appearing to read "Claudia Sait".

Claudia Sait
Project Manager-Federal Facilities
Bureau of Remediation & Waste Management

Cf: File
Larry Dearborn-MEDEP
Lisa Joy-BNAS
Christine Williams-EPA
Carolyn Lepage-Lepage Environmental
Al Easterday-EA (email only)
Darren Gainer -ECC
Ed Benedikt